IN THE CLAIMS

Upon entry of the present amendment, the status of the claims will be as is shown below. This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A method for routing data packets from a subscriber device, over a broadband access link, through a first internet protocol (IP) version 6 (IPv6) network to a second IP network, the first and second IP networks interfacing through a second IP network edge device, the method comprising:

~~providing~~ assigning a first IP address to the subscriber device, the first IP address being associated with the first IP network;

~~providing~~ assigning a second IP address to the subscriber device based on a request routed through the first IP network from the subscriber device, the second IP address being associated with the second IP network; and

forwarding a data packet addressed with both the first IP address and the second IP address, from the subscriber device,

wherein the first IP address is compliant with a first protocol implemented by the first IP network, and

wherein the second IP address is compliant with a second protocol distinct from the first protocol implemented by the second IP network.

2. (Previously Presented) The method for routing data packets according to claim 1,

wherein the request comprises a dynamic host configuration protocol (DHCP) request.

3. (Previously Presented) The method for routing data packets according to claim 2,

wherein the subscriber device comprises an IP version 4 (IPv4) device, the method further comprising:

encapsulating the DHCP request in an IPv6 packet for routing the DHCP request through the first IP network.

4. (Previously Presented) The method for routing data packets according to claim 2,

wherein the subscriber device comprises an IPv6 device, the method further comprising:

modifying the DHCP request to include a two-hop IPv6 routing header for routing the DHCP request through the first IP network.

5. (Previously Presented) The method for routing data packets according to claim 4,

wherein the two-hop IPv6 routing header comprises an IP address of the second IP network edge device as a first hop address and an IP broadcast address of the DHCP request as a second hop address, and

wherein the IP address of the second IP network edge device is associated with the first IP network.

6. (Previously Presented) The method for routing data packets according to claim 5,

wherein providing the second IP address to the subscriber device is further based on a DHCP response routed through the first IP network from the edge device to the subscriber device, the method further comprising:

modifying the DHCP response to include a two-hop IPv6 routing header for routing the DHCP response through the first IP network to the subscriber device.

7. (Previously Presented) The method for routing data packets according to claim 6, wherein the two-hop IPv6 routing header of the DHCP response comprises the first IP address of the subscriber device as a first hop address and the second IP address of the subscriber devices as a second hop address.

8. (Previously Presented) A method for forwarding data packets of a subscriber for transmission from an originating device over a broadband access link through an internet protocol (IP) network to a destination network, the method comprising:

allocating a first subscriber IP address to the originating device, the first subscriber IP address being associated with the IP network;

receiving a dynamic host configuration protocol (DHCP) request from the originating device, the DHCP request being associated with the first subscriber IP address;

sending the DHCP request through the IP network to a destination device in the destination network using an IP network address of the destination device, the destination device forwarding the DHCP request to a DHCP server;

receiving a DHCP response from the DHCP server, through the destination device, the DHCP response including a second subscriber IP address from the DHCP server, the second subscriber IP address being associated with the destination network; and

sending the DHCP response through the IP network to the originating device using the first subscriber IP address, enabling the originating device to obtain the second subscriber IP

address from the DHCP response and forward subsequent data packets addressed with both the first subscriber IP address and the second subscriber IP address.

9. (Previously Presented) The method for forwarding data packets according to claim 8,

wherein the IP network comprises an IP version 6 (IPv6) network, and

wherein the first subscriber IP address and the IP network address of the destination device comprise IPv6 addresses.

10. (Previously Presented) The method for forwarding data packets according to claim 9,

wherein the originating device comprises an IP-version 4 (IPv4) device, the DHCP request comprises a DHCPv4 request, the DHCP response comprises a DHCPv4 response and the second subscriber IP address comprises an IPv4 address.

11. (Previously Presented) The method for forwarding data packets according to claim 10,

wherein sending the DHCP request through the IP network comprises:

encapsulating the DHCPv4 request in a first IPv6 packet, using the IPv6 network address of the destination device as a first destination address, and sending the first IPv6 packet to the destination device using the first destination address,

wherein the destination device extracts the DHCPv4 request from the first IPv6 packet prior to forwarding the DHCPv4 request to the DHCP server.

12. (Previously Presented) The method for forwarding data packets according to claim 11,

wherein sending the DHCP response through the IP network comprises:

encapsulating the DHCPv4 response in a second IPv6 packet, using the first subscriber IPv6 address as a second destination address, and sending the second IPv6 packet to the originating device using the second destination address,

wherein the originating device extracts the DHCPv4 response from the second IPv6 packet to obtain the second subscriber IPv4 address.

13. (Previously Presented) The method for forwarding data packets according to claim 9,

wherein the originating device comprises an IPv6 device, the DHCP request comprises a DHCPv6 request, the DHCP response comprises a DHCPv6 response and the second subscriber IP address comprises an IPv6 address.

14. (Previously Presented) The method for forwarding data packets according to claim 13,

wherein sending the DHCP request through the IP network comprises:

modifying the DHCPv6 request to include a two-hop IPv6 routing header comprising the IPv6 network address of the destination device as a first hop address and an IPv6 broadcast address of the DHCPv6 request as the second hop address, and sending the DHCPv6 request to the destination device using the first hop address.

15. (Previously Presented) The method for forwarding data packets according to claim 14,

wherein sending the DHCP response through the IP network comprises:

modifying the DHCPv6 response to include a two-hop IPv6 routing headercomprising the first subscriber IPv6 address as a first hop address and the second subscriber IPv6 address of the

DHCPv6 request as the second hop address, and sending the DHCPv6 response to the destination device using the first hop address.

16. (Previously Presented) The method for forwarding data packets according to claim 8,

wherein allocating the first subscriber IP address comprises matching a previously allocated network IPv6 address of the subscriber.

17. (Previously Presented) The method for forwarding data packets according to claim 8,

wherein allocating the first subscriber IP address comprises receiving an initial DHCP request at a DHCP server associated with the IP network, and sending an initial DHCP response to the originating device from the IP network DHCP server, the initial DHCP response including the first subscriber IP address.

18. (Previously Presented) A system for forwarding data packets of a subscriber for transmission over a broadband access link from an originating device through a first internet protocol (IP) network to a second IP network, the first IP network and the second IP network interfacing through at least one edge device of the second IP network, the system comprising:

a first dynamic host configuration protocol (DHCP) server in the first IP network that allocates a first subscriber IP address to the originating device, the first subscriber IP address being associated with the first IP network; and

a second DHCP server in the second IP network that receives a DHCP request from the originating device through the at least one edge device, allocates a second subscriber IP address to the originating device, and sends a DHCP response having the second subscriber IP address

through the at least one edge device to the originating device, the second subscriber IP address being associated with the second IP network,

wherein the originating device forwards data packets with both the first subscriber IP address and the second subscriber IP address.

19. (Previously Presented) The system for forwarding data packets according to claim 18,

wherein the first IP network comprises an IP-version 6 (IPv6) network and the first subscriber IP address comprises an IPv6 address.

20. (Previously Presented) The system for forwarding data packets according to claim 19,

wherein the originating device comprises an IP-version 4 (IPv4) device, the second DHCP server comprises a DHCPv4 server, the DHCP request comprises a DHCPv4 request, the DHCP response comprises a DHCPv4 response and the second subscriber IP address comprises an IPv4 address.

21. (Previously Presented) The system for forwarding data packets according to claim 20,

wherein the DHCP request from the origination device is encapsulated in a first IPv6 packet received by the at least one edge device based on an IPv6 address of the at least one edge device included in the first IPv6 packet, and

wherein the at least one edge device extracts the DHCP request from the first IPv6 packet prior to forwarding the DHCP request to the second DHCP server.

22. (Previously Presented) The system for forwarding data packets according to claim 21,

wherein the DHCP response from the second DHCP server is encapsulated in a second IPv6 packet, received by the originating device based on the first subscriber IP address included in the second IPv6 packet, the originating device extracting the DHCP response from the second IPv6 packet to obtain the second subscriber IP address.

23. (Previously Presented) The system for forwarding data packets according to claim 19,

wherein the originating device comprises an IPv6 device, the second DHCP server comprises a DHCPv6 server, the DHCP request comprises a DHCPv6 request, the DHCP response comprises a DHCPv6 response and the second subscriber IP address comprises an IPv6 address.

24. (Previously Presented) The system for forwarding data packets according to claim 23,

wherein the DHCPv6 request from the origination device is modified to include a two-hop IPv6 routing header, comprising an IPv6 network address of the at least one edge device as a first hop address and an IPv6 broadcast address of the DHCPv6 request as a second hop address, the at least one edge device receiving the DHCPv6 request based on the first hop address.

25. (Previously Presented) The system for forwarding data packets according to claim 24,

wherein the DHCPv6 response from the second DHCP server is modified to include a two-hop IPv6 routing header, comprising the first subscriber IPv6 address as a first hop address and the second subscriber IPv6 address as a second hop address, the at least one edge device directing the DHCPv6 response to the originating device using the first hop address.

26. (Previously Presented) The system for forwarding data packets according to claim 18, wherein the second IP network comprises one of an internet service provider network and a private network.